IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANTS:	Anderson, Thomas Michael, et al.	EXAMINER:	Wasel, Mohamed
SERIAL NO.:	10/044,555	GROUP:	2154
FILED:	January 11, 2002	CASE NO.:	CE04890N
TITLED:	Dynamic CAN Bus System Configuration and Messaging		

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Please consider the following Appeal Brief for the above identified patent application assigned to Motorola, Inc. pursuant to the Final Office Action dated December 12, 2006, Amendment dated January 23, 2007, Advisory Action dated February 13, 2007 and Appeal filed April 11, 2007.

I. REAL PARTY IN INTEREST

The subject application is assigned to Motorola, Inc., the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

To Appellants' knowledge, there are no related appeals or interferences.

III. STATUS OF CLAIMS

1. Claims 1-17 are rejected under 35 U.S.C. § 103(a) as being un patentable over United States Patent No. 5,742,833 to Dea et al. in view of United States Patent Application Publication No. 20002/0097720 to Goodman et al.
2. Claims 18-27 are cancelled.

Claims 1-17 are appealed

III. STATUS OF AMENDMENTS

No amendments have been made to the claims after the Final Office Action.

IV. SUMMARY OF CLAIMED SUBJECT MATTER

Although specification citations are inserted below in accordance with C.F.R. 41.37(c)(1)(v), these reference numerals and citations are merely examples of where support may be found in the specification for the terms used in this section of the brief. There is no intention to in any way suggest that the terms of the claims are limited to the examples in the specification. Although, as demonstrated by the reference numerals and citations below, the claims are fully supported by the specification as required by law, it is improper under the law to read limitations from the specification into the claims.

Pointing out specification support for the claim terminology, as is done here to comply with rule 41.37(c)(1)(v), does not in any way limit the scope of the claims to those examples from which they find support. Nor does this exercise provide a mechanism for circumventing the law precluding reading limitations into the claims from the specification. In short, the reference numerals and specification citations are not to be construed as claim limitations or in any way used to limit the scope of the claims.

The subject matter to which the claims are directed includes a method and system for communicating over a controller area network (CAN) bus (14-22) enables messages to be routed from a controlling software component (46-50) to one or more processor-enabled peripheral devices (24-44) on a discrete basis over the CAN bus to control the plurality of processor-enabled peripheral devices. By overlaying a hardware device protocol on a CAN bus protocol to realize CAN bus messaging, the controlling software components can discretely communicate with the external processor-controlled peripheral devices using the multiple multi-drop CAN busses. In addition, a method and system for handling registration of a processor-enabled peripheral device with a controlling software component includes creating a logical connection between the processor-enabled peripheral device and the controlling software component and breaking the logical connection between the processor-enabled peripheral device and the controlling software component if the processor-enabled peripheral device is removed and re-introduced or if the controlling software component is reset for re-registration purposes to provide plug-and-play capabilities and dynamic registration of processor-enabled peripheral devices. See Abstract.

Independent claim 1 provides a method of communicating over a controller area network (CAN) bus (FIG. 1, 14-22, page 5 line 10 to page 6 line 3.) The claimed method comprises routing registration information from a plurality of processor-enabled peripheral devices (FIG. 1, 24-44, page 5 line 10 to page 6 line 3) to a controlling software component (FIG. 1, 46-50, page 6 line 10 to page 7 line 9.) See FIGs 2A-2C, page 8 line 22 to page 9 line 19, page 20 line 18 to page 21 line 6. The claimed method also comprises routing a periodic heartbeat message from the controlling software component to the plurality of processor-enabled peripheral devices to enable each of the plurality of processor-enabled peripheral devices to maintain its registered status. See

page 8 lines 4-21. In addition, the claimed method comprises, if necessary, routing messages from the controlling software component to one or more of the plurality of processor-enabled peripheral devices on a discrete basis over the CAN bus to control the one or more of the plurality of processor-enabled peripheral devices. See page 14 line 16 to page 15 line 6.

Independent claim 6 provides for a method of communicating over a controller area network (CAN) bus (FIG. 1, 14-22, page 5 line 10 to page 6 line 3.) The claimed method comprises routing a registration message from a processor-enabled peripheral device (FIG. 1, 24-44, page 5 line 10 to page 6 line 3) to a controlling software component (FIG. 1, 46-50, page 6 line 10 to page 7 line 9.) See FIGs 2A-2C, page 8 22 line to page 9 line 19, page 20 line 18 to page 21 line 6. The claimed method also comprises at the processor-enabled peripheral device, periodically receiving a heartbeat message from the controlling software component subsequent to the routing of a registration message from a processor-enabled peripheral device to a controlling software component. See page 8 lines 4-21. In addition, the claimed method comprises receiving at the processor-enabled peripheral device discrete control messages that are transmitted from the controlling software component. See page 14 line 16 to page 15 line 6.

Independent claim 12 provides a controller area network (CAN) bus (FIG. 1, 14-22, page 5 line 10 to page 6 line 3) for enabling a controlling software component (FIG. 1, 46-50, page 6 line 10 to page 7 line 9) to communicate discretely with each of a plurality of processor-enabled peripheral devices (FIG. 1, 24-44, page 5 line 10 to page 6 line 3) irrespective of whether the processor-enabled peripheral devices are like devices. The bus comprises a processor (FIG. 1, 14a-22a, page 5 line 10 to page 6 line 3) for routing control messages between the controlling software component and the plurality of processor-enabled peripheral devices. The bus also comprises a plurality of bus lines (FIG. 1, page 5 line 10 to page 6 line 3) for connecting the processor to the controlling software component and the plurality of processor-enabled peripheral devices. In addition, the bus comprises the processor for enabling the control messages to be discretely transmitted from the controlling software component to one or more of the plurality of processor-enabled peripheral devices. See page 14 line 16 to page 15 line.

V. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-17 are rendered obvious by United States Patent No. 5,742,833 to Dea et al. in view of United States Patent Application Publication No. 2002/0097720 to Goodman et al. under 35 U.S.C. §103(a).

VI. ARGUMENTS

35 U.S.C. § 103(a)

Independent Claims 1, 6 and 12

Claims 1-17 are rejected under U.S.C. §103 as being unpatentable over Dea in view of Goodman et al. Appellants respectfully traverse the rejections.

It is incumbent upon the Examiner to prove a *prima facie* case of obviousness (MPEP 2142). To establish a *prima facie* case three basic criteria must be met. First, the prior art reference must teach or suggest all the claim limitations. Second, there must be a reasonable expectation of success. Finally, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Appellants respectfully traverse the rejection because there is no suggestion or motivation contained in the references to combine them.

Before obviousness may be established, the Office Action *must show specifically* the principle, known to one of ordinary skill that suggests the claimed combination. In re Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). In other words, the Examiner *must explain* the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention. Id. The factual question of motivation is material to patentability and *cannot be resolved based on subjective belief and unknown authority*. Id. at 1344. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined *only if there is some suggestion or incentive to do so*. ACS

Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577 (Fed. Cir. 1984). The critical inquiry is whether there is something in the prior art as a whole *to suggest* the desirability, and thus the obviousness, of making the combination. Fromson v. Advance Offset Plate, 755 F.2d 1549, 1556 (Fed. Cir. 1985). The *Office Action fails to show either a suggestion in the art or a compelling motivation based on sound scientific principles to combine the references and therefore the rejection under 35 U.S.C. § 103(a) is improper and should be withdrawn*. Appellants respectfully submit that there is no suggestion to combine the references, and if they could be properly combined, do not lead to the Appellants' invention.

In paragraph 1 of the Office Action it is stated after the claim limitations allegedly found in Dea and Goodman are listed only that "Therefore, it would be obvious to one of the ordinary skill in the art at the time of the applicants' invention to combine the teaches of Dea and Goodman because it provide an optimized way of transferring data and power between computer system hardware components." No reasons that would prompt one of ordinary skill in the art to combine these references into the claimed invention are provided. In the Response to Argument section, the Examiner provides the conclusory statement that Appellants' claims would be obvious to one of ordinary skill in the art to combine Dea and Goodman to provide an optimized way of transmitting commands and data among hardware components. Then, the Examiner uses stock language to say no hindsight is being used to create combination. Finally, the statement is made that Dea's use of an Ethernet and monitoring of packets and Goodman's teaching of enabling communication among nodes in a system using a CAN bus demonstrates that the two references are in analogous art.

Regardless, the Examiner's statements fail to provide a reason to combine the two references into the claimed invention. The Supreme Court's recent decision in KSR International Co. v. Telefax Inc. still requires something more than finding each claim element in a series of references and saying that a claimed invention is therefore obvious. See 550 U.S. ___, 14-15 (2007) ("As is clear from cases such as Adams, a patent composed of several elements is not provided obvious by demonstrating that each of its elements was independently known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two

known devices according to there established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.") Appellants respectfully submit that there is no reason given the teaches of Dea and Goodman to combine them to create the claimed invention in independent claims 1, 6 and 12 and that no reason exists.

Dea teaches a method of providing for improved energy efficiency in a network, particularly a data processing system (column 3 lines 13-14, column 4 lines 61-67). Dea goes on to teach an Ethernet network and the monitoring and transmission of packets over the Ethernet network to facilitate improved energy efficiency in computers connected to the Ethernet network (column 7 line 66 to column 8 line 16). Dea teaches that improved ways of using broadcast messages are needed to prevent unnecessary wakes up of devices connected to the Ethernet. To achieve this result, Dea maintains network connections in a low power state to improve energy saving features in the network environment.

In sum, Dea is directed to a programmable power management. In contrast, the present claims are directed to a registration process and maintaining connections with a CAN bus. While Dea teaches TCP/IP and IPX, Dea does not teach or suggest the use of a CAN bus, which is significantly different from an Ethernet network. Primarily, a CAN bus does not use packets, as does the Ethernet network.

Goodman teaches an implementation of a nodal system in a storage library. The storage library includes accessor node and processor node connected by a CAN bus. Gripper electronics move a gripper assembly in an X-Y pattern along with a robotic hand in order to grab and insert storage cartridges from a library into a processing device [0026]. The purpose of Goodman's nodal system in a storage library is to improve techniques for implementing system components and for providing intercommunication among the processes executing with the system components [0005].

There is nothing in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination cited by the Examiner. The method of providing improved energy efficiency of Dea does not hint or suggest a combination with the nodal library system taught by Goodman. Further, the nodal library system of

Goodman does not teach or suggest a combination with the method of improving energy efficiency of Dea. It is respectfully submitted that one or ordinary skill in the art would look to Dea to teach and provide suggestions for programmable power management solutions. Moreover, one of ordinary skill in the art may also look to Dea for teachings about Ethernets. As for Goodman, one of ordinary skill in the art would turn to that reference for teachings on nodal libraries and for CAN busses. The present invention, however, is directed to maintaining registration of peripheral devices on a CAN bus by routing registration information, routing periodic heartbeat messages to maintain its registration status and routing messages on a discrete bases over the CAN bus to control the peripheral devices. And the cited combination does not provide any mention or suggestion of why these elements would be combined to create the claimed invention.

The Examiner alleges that Dea and Goodman are analogous arts and in the same field of endeavor. Appellants respectfully disagree. The method of providing improved energy efficiency in computers connected via an Ethernet network has absolutely nothing to do with Goodman's nodal system in a storage library, where a CAN bus is used. While Ethernets and CAN busses are both communication systems, the similarity ends there. The networks operate using different principles and are used for different purposes. Controller Area Network (CAN) is a multicast shared serial bus standard for connecting electronic control units (ECUs). CAN was specifically designed to be robust in electromagnetically noisy environments. Although initially created for automotive purposes (as a vehicle bus), it may be used in other *embedded control applications* (e.g., industrial) that may be subject to noise. This is contrasted with *Ethernet, which is a frame-based network that utilizes packets*. Further, a bus, or a CAN bus is a subsystem that transfers data or power between computer components in a computer, whereas Ethernet does NOT. This is contrasted with Dea, which teaches a LAN between multiple computers merely using Ethernet, which is conceptually and technologically non-analogous to a CAN bus.

Appellants' assert that the cited art of Dea and Goodman are not in the same field and would not both be known to a person of ordinary skill in the art in the field of Appellants' invention. There is no motivation in either Dea or Goodman to combine the two, and any assertion to the contrary is impermissible hindsight reconstruction based on

Applicants' own teachings. Appellants' position is further strengthened by the differences between a CAN bus as taught by Goodman, and the power management system and the packet based network taught by Dea. Appellants therefore respectfully submit that the mere fact that both CAN busses and Ethernets are communication networks that similarity alone is not sufficient to state that they are analogous art and that one of ordinary skill in the art would use the teachings of one reference with another reference to produce the claimed invention.

In view of the foregoing, Appellants respectfully submit that the combination of Dea and Goodman do not render the present independent claims obvious. In particular, there is no reason provided to combine the references, and no valid reason exists. The similarities between Dea and Goodman are not strong enough to produce the claimed routing of registration messages to peripheral devices on the CAN bus, routing of heartbeat messages on the CAN bus and the routing of messages on a discrete basis over the CAN bus to control peripheral devices. Appellants therefore respectfully submit that independent claims 1, 6 and 12 are patentable over the cited combination. As claims 2-5 depend upon and include the limitations of claim 1, claims 7-11 depend upon and include the limitations of claim 6 and claims 13-17 depend upon and include the limitations of claim 12, Appellants respectfully submit that these dependent claims are patentable over the cited combination for the reasons given above.

Summary

For the above reasons, the appellants respectfully submit that the rejection of claims 1, 6 and 12 under 35 U.S.C. §103(a) as being unpatentable over Dea in view of Goodman is in error and should be reversed and the claims allowed.

VIII. CLAIMS APPENDIX

1. (Original) A method of communicating over a controller area network (CAN) bus, comprising:

routing registration information from a plurality of processor-enabled peripheral devices to a controlling software component;

routing a periodic heartbeat message from the controlling software component to the plurality of processor-enabled peripheral devices to enable each of the plurality of processor-enabled peripheral devices to maintain its registered status; and

if necessary, routing messages from the controlling software component to one or more of the plurality of processor-enabled peripheral devices on a discrete basis over the CAN bus to control the one or more of the plurality of processor-enabled peripheral devices.

2. (Original) The method of claim 1, further comprising causing the controlling software component to consecutively receive frames of a multi-frame message transmitted from one of the plurality of processor-enabled peripheral devices.

3. (Original) The method of claim 1, wherein the routing of messages from the controlling software component to one or more of the plurality of processor-enabled peripheral devices on a discrete basis to control the one or more of the plurality of processor-enabled peripheral devices comprises routing messages each having a like header to the one or more of the plurality of processor-enabled peripheral devices on a discrete basis to control the one or more of the plurality of processor-enabled peripheral devices.

4. (Original) The method of claim 3, wherein the routing of messages each having a like header to one or more of the plurality of processor-enabled peripheral devices on a discrete basis to control the one or more of the plurality of processor-enabled peripheral devices comprises routing messages each having a common header component and a CAN header component to the one or more of the plurality of

processor-enabled peripheral devices on a discrete basis to control the one or more of the plurality of processor-enabled peripheral devices.

5. (Original) The method of claim 4, wherein the routing of messages each having a common header component and a CAN header component to the one or more of the plurality of processor-enabled peripheral devices on a discrete basis to control the one or more of the plurality of processor-enabled peripheral devices further comprises routing messages each having a common header component and a CAN header component without specific knowledge by the controlling software component of the CAN header component.

6. (Original) A method of communicating over a controller area network (CAN) bus, comprising:

routing a registration message from a processor-enabled peripheral device to a controlling software component;

at the processor-enabled peripheral device, periodically receiving a heartbeat message from the controlling software component subsequent to the routing of a registration message from a processor-enabled peripheral device to a controlling software component; and

receiving at the processor-enabled peripheral device discrete control messages that are transmitted from the controlling software component.

7. (Original) The method of claim 6, wherein the receiving at the processor-enabled peripheral device discrete control messages that are transmitted from the controlling software component comprises filtering the transmitted control messages at the processor-enabled peripheral device to enable only the discrete control messages intended specifically for the processor-enabled peripheral device to reach the processor-enabled peripheral device.

8. (Original) The method of claim 7, wherein the filtering of the transmitted control messages at the processor-enabled peripheral device to enable only the discrete

control messages intended specifically for the processor-enabled peripheral device to reach the processor-enabled peripheral device comprises filtering the transmitted control messages at the processor-enabled peripheral device via a hardware filter to determine whether the transmitted control messages are for a certain type of processor-controlled peripheral device, and filtering the transmitted control messages at the processor-enabled peripheral device via a software filter to determine processor-controlled peripheral device numbers from respective message CAN headers.

9. (Original) The method of claim 8, further comprising receiving at the processor-enabled peripheral device all message frames following the processor-enabled peripheral device type and number information subsequent to the filtering of processor-enabled peripheral device type and number information from the discrete control messages intended specifically for the processor-enabled peripheral device.

10. (Original) The method of claim 7, wherein the filtering the transmitted control messages at the processor-enabled peripheral device to enable only the discrete control messages intended specifically for the processor-enabled peripheral device to reach the processor-enabled peripheral device is invisible with respect to the controlling software component.

11. (Original) The method of claim 6, further comprising, at the processor-enabled peripheral device, consecutively receiving frames of a multi-frame discrete control message.

12. (Original) A controller area network (CAN) bus for enabling a controlling software component to communicate discretely with each of a plurality of processor-enabled peripheral devices irrespective of whether the processor-enabled peripheral devices are like devices, comprising:

a processor for routing control messages between the controlling software component and the plurality of processor-enabled peripheral devices;

a plurality of bus lines for connecting the processor to the controlling software component and the plurality of processor-enabled peripheral devices; and

the processor for enabling the control messages to be discretely transmitted from the controlling software component to one or more of the plurality of processor-enabled peripheral devices.

13. (Original) The CAN bus of claim 12, wherein the processor is programmed with a software switch for enabling the controlling software component to consecutively receive frames of a multi-frame message transmitted from one of the plurality of processor-enabled peripheral devices.

14. (Original) The CAN bus of claim 12, wherein the processor is programmed for enabling transmission of multi-frame CAN bus messages.

15. (Original) The CAN bus of claim 12, wherein the processor is further for generating a CAN header component for each of the control messages transmitted from the controlling software component to enable the control messages to be discretely transmitted from the controlling software component to one or more of the plurality of processor-enabled peripheral devices.

16. (Original) The CAN bus of claim 12, wherein the processor is further for causing frames of a multi-frame message transmitted to one of the plurality of processor-enabled peripheral devices from the controlling software component to be consecutively received at the one of the plurality of processor-enabled peripheral devices.

17. (Original) The CAN bus of claim 12, wherein the processor and the plurality of bus lines are implemented on a controlling board of a wireless base station.

18-27 (Cancelled)

IX. EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132, nor has any other evidence been entered by the Examiner and relied upon by the Appellants.

X. RELATED PROCEEDINGS APPENDIX

The Appellants and Appellants' representative know of no other appeal, interference, or judicial proceeding that may be related to, directly affect or be directly affected by, or have a bearing upon the Board's decision in the pending appeal.

Please charge any fees associated herewith, including extension of time fees, to **50-2117**.

Respectfully submitted,
Anderson, Thomas Michael, et al.

SEND CORRESPONDENCE TO:

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